

ABSTRACT

A microwave plasma processing method is provided which enables a uniform thin film layer to be formed on a surface to be processed and which enables a short time processing. In the microwave plasma processing method, microwaves are introduced into a plasma processing chamber 1, and a processing gas is transformed into plasma to form a thin film layer on a base substance 13 disposed in the plasma processing chamber 13, and the method comprises: fixing the base substance 13 coaxially with a central axis of the plasma processing chamber 1; setting a standing wave mode of the microwaves in the plasma processing chamber to a TE mode or a TEM mode from a mouth portion 131 to a body portion 133 of the base substance; and setting a mode having both the TE mode and a TM mode in a bottom portion 132 of the base substance.